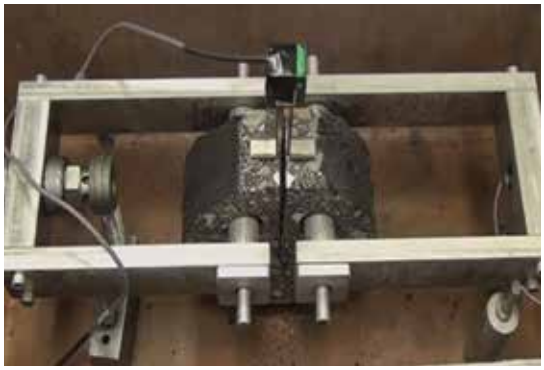
Name of Test **Disc-Shaped Compact Tension Test**	Developer(s) Buttlar and co-workers University of Illinois at Urbana–Champaign
Test Method(s) ASTM D7313-13	Adoption by Agencies Iowa
Description The DCT test is performed under tensile loading and the crack mouth opening displacement (CMOD) is measured with a clip-on gage at the crack mouth. After temperature conditioning, specimens are inserted in loading fixtures, subjected to a preload no greater than 0.2 kN, and then tested with a constant CMOD of 1 mm/min. The test is completed when the post peak level reduces to 0.1 kN.	Photographs/Illustrations 
Test Results Fracture energy	Test Temperature(s) PG low temperature limit + 10°C (ASTM)

Equipment & Approximate Cost	
Stand-alone DCT test system	$50,000
Core drill	$3,000
Saw for cutting specimens	$6,000
Saw for notching specimens	$1,000

Specimen Fabrication	Number of Replicate Specimens
Cylinder specimen, 3 cuts, 1 notch, 2 holes, gluing gauge points (4 hours)	Not specified. Minimum 4 (NCAT)
Specimen Conditioning Conditioning for 8 to 16 hours at the desired test temperature	Testing Time 30 Minutes
Data Analysis Complexity Simple	Test Variability Low (10-15% COV)
Field Validations Good (pavement sections in New York, Iowa, Illinois, and on UIUC-ATLAS APT and MnROAD)	Overall Practicality for Mix Design and QA Good for Mix Design Poor for QA

Key References

- Wagoner, M.P., W.G. Buttlar, and P. Blankenship (2005). Investigation of the Fracture Resistance of Hot-Mix Asphalt Concrete Using a Disk-shaped Compact Tension Test. Transportation Research Board. Washington D.C.
- Wagoner, M., W. Buttlar, G. Paulino, and P. Blankenship (2006), Laboratory Testing Suite for Characterization of Asphalt Concrete Mixtures Obtained from Field Cores, Journal of the Association of Asphalt Paving Technologists, Vol. 75, pp. 815-852.
- Marasteanu, M., E.Z. Teshale, K.H. Moon, M. Turos, W. Buttlar, E. Dave, and S. Ahmed (2010). Investigation of Low Temperature Cracking in Asphalt Pavements National Pooled Fund Study – Phase II. United States: Minnesota Department of Transportation.